

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Previously Presented): A pattern inspection apparatus which performs die-to-die inspection of comparing detected pattern data of one area with detected pattern data of another area among a plurality of repeated pattern areas, comprising:

first imaging optics which forms first optical image of a pattern formed on an inspection target plate on the basis of design pattern data;

a detected pattern data generator which detects the first optical image and generates first detected pattern data;

second imaging optics which forms second optical image of the pattern, the second imaging optics serving to scan an entire region of the pattern on the inspection target plate with an optical magnification lower than that of the first imaging optics;

a low-resolution image data generator which generates second detected pattern data corresponding to the entire region of the pattern on the inspection target plate by using the second optical image;

repeated pattern area detector which detects whether candidates for the plurality of repeated pattern areas exist in the second detected pattern data by performing rough search of the second detected pattern data, measures area sizes of the candidates if the candidates exist; and

a comparator which sequentially compares the first detected pattern data corresponding to the plurality of repeated pattern areas detected by the repeated pattern area detector through the second imaging optics in accordance with die-to-die comparison, wherein,

after the second imaging optics forms the second optical image of the pattern, the low-resolution image data generator generates the second detected pattern data corresponding

to the entire pattern region using the second optical image, the repeated pattern generator detects if the candidates exist, the first imaging optics forms the first optical image of the candidates, the detected pattern data generator generates the first detected pattern data of the candidates, and the comparator compares the first detected pattern data with die-to-die comparison.

Claim 2 (Original): An apparatus according to claim 1, wherein the repeated pattern area detector detects the plurality of repeated pattern areas by pattern matching on the basis of a similarity in a pattern layout of the second detected pattern data.

Claim 3 (Original): An apparatus according to claim 2, wherein the similarity in the pattern includes a pitch and size of the plurality of repeated pattern areas.

Claim 4 (Original): An apparatus according to claim 1, wherein the repeated pattern area detector further performs detection of the plurality of repeated pattern areas on the basis of the design pattern data.

Claim 5 (Previously Presented): An apparatus according to claim 1, wherein the repeated pattern area detector re-acquires image data of the pattern with a second optical magnification higher than that of a first optical magnification with which the sizes of the candidates are measured, within the detected area sizes, judges a coincidence degree of the candidates on the basis of the re-acquired image data, and registers the candidates, when judged to coincide, as the plurality of repeated pattern areas.

Claim 6 (Original): An apparatus according to claim 5, wherein the second imaging optics has at least two optical magnifications which are to be switched, and the repeated pattern area detector re-acquires the image data of the pattern by switching the optical magnification of the second imaging optics to the second optical magnification, which is higher than the first optical magnification.

Claim 7 (Original): An apparatus according to claim 5, wherein the repeated pattern area detector re-acquires the image data of the pattern by using the first imaging optics.

Claim 8 (Original): An apparatus according to claim 1, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to be detected to those having rectangular shapes.

Claim 9 (Original): An apparatus according to claim 8, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to those having a size not smaller than 1 mm square.

Claim 10 (Original): An apparatus according to claim 1, wherein the repeated pattern area detector detects a size or number of the repeated pattern areas input in advance before detection operation, and thereafter starts the detection operation.

Claim 11 (Currently Amended): A pattern inspection apparatus which performs die-to-die inspection of comparing detected pattern data of one area with detected pattern data of another area among a plurality of repeated pattern areas, and die-to-database

inspection of comparing the detected pattern data with reference pattern data obtained from design pattern data, comprising:

first imaging optics which form a first optical image of a pattern formed on an inspection target plate on the basis of the design pattern data;

a detected pattern data generator which detects the optical image and generates the detected pattern data;

a repeated pattern area detector which generates image data of an entire region of the pattern from the design pattern data with a pixel size corresponding to a first optical magnification lower than an optical magnification of the first imaging optics, and detects whether candidates for the plurality of repeated pattern areas exist in the design pattern data by performing rough search of the detected pattern data, measures area sizes of the candidates if the candidates exist; and

a comparator which sequentially compares a plurality of detected pattern areas on the detected pattern data corresponding to the plurality of repeated pattern areas detected by the repeated pattern area detector in accordance with die-to-die comparison, wherein,

~~after the first imaging optics forms the first optical image and the detected pattern generator detects the first optical image to generate the detected pattern data, the repeated pattern area generator generates the image data of the entire image region of the pattern from the design pattern data with the pixel size corresponding to the first optical magnification to detect if the candidates for the repeated pattern areas exist, the first imaging optics forms the first optical image of the candidates for the repeated pattern areas, the detected pattern generator detects the first optical image to generate the detected pattern data, and the~~ comparator compares the detected pattern areas on the detected pattern data with the die-to-die comparison.

Claim 12 (Previously Presented): An apparatus according to claim 11, wherein the repeated pattern area detector re-acquires image data of the pattern with a second optical magnification higher than that of a first optical magnification with which the sizes of the candidates are measured, or with a pixel size corresponding to the second optical magnification within the detected area sizes, judges a coincidence degree of the candidates on the basis of the re-acquired image data, and registers the candidates, when judged to coincide, as the plurality of repeated pattern areas.

Claim 13 (Original): An apparatus according to claim 12, wherein the repeated pattern area detector re-acquires the image data from the design pattern data with the pixel size corresponding to the second optical magnification.

Claim 14 (Original): An apparatus according to claim 12, wherein
the apparatus further comprises a second imaging optics which forms a second optical image of the pattern, the second imaging optics having the second optical magnification higher than the first optical magnification, and
the repeated pattern area detector re-acquires the image data from the second optical image.

Claim 15 (Original): An apparatus according to claim 12, wherein the repeated pattern area detector re-acquires the image data from the first optical image of the first imaging optics.

Claim 16 (Original): An apparatus according to claim 11, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to be detected to those having rectangular shapes.

Claim 17 (Original): An apparatus according to claim 16, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to those having a size not smaller than 1 mm square.

Claim 18 (Original): An apparatus according to claim 11, wherein the repeated pattern area detector detects a size or number of the repeated pattern areas input in advance before detection operation, and thereafter starts the detection operation.

Claim 19 (Previously Presented): A pattern inspection apparatus which performs die-to-die inspection of comparing detected pattern data of one area with detected pattern data of another area among a plurality of repeated pattern areas, and die-to-database inspection of comparing the detected pattern data with reference pattern data obtained from design pattern data, comprising:

imaging optics which form an optical image of a pattern formed on an inspection target plate on the basis of the design pattern data;

a detected pattern data generator which detects the optical image and generates the detected pattern data;

a repeated pattern area detector which analyzes layout information of the design pattern data as to whether patterns from the same file, in which repeated pattern data is included, exist, detects the plurality of repeated pattern areas from the design pattern data, and registers the repeated pattern areas; and

a comparator which sequentially compares the detected pattern data, corresponding to the plurality of repeated pattern areas registered, by the die-to-die inspection, when the plurality of repeated pattern areas are detected by the repeated pattern area detector, wherein, while the imaging optics forms the optical image and the detected pattern generator detects the optical image to generate the detected pattern data, the repeated pattern area detector analyzes the layout information of the design pattern data as to whether the patterns from the same file exist, detects and registers the repeated pattern areas from the design pattern data, and the comparator compares the detected pattern data corresponding to the detected pattern areas registered with the die-to-die comparison.

Claim 20 (Original): An apparatus according to claim 19, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to be detected to those having rectangular shapes.

Claim 21 (Original): An apparatus according to claim 19, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to those having a size not smaller than 1 mm square.

Claim 22 (Original): An apparatus according to claim 19, wherein the repeated pattern area detector detects a size or number of the repeated pattern areas input in advance before detection operation, and thereafter starts the detection operation.